Financial Disclosure and the Board: Is Independence of Directors Always Efficient

Antoine Reberioux, Yuri Biondi, Giannoccolo Pierpaolo

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Yuri Biondi (CNRS, Ecole Polytechnique)
yuri.biondi@polytechnique.edu

Pierpaolo Giannoccolo (University of Bologna, Department of Economics)
pierpaolo.giannoccolo@unibo.it

Antoine Rebérioux (University Paris Ouest Nanterre La Défense, EconomiX)
antoine.reberioux@u-paris10.fr

Abstract – In listed companies, the Board of directors is the ultimate responsible of information disclosure. The "conventional wisdom" considers independence of directors as the essential attribute to improve the quality of that disclosure. In a sense, this approach subordinates expertise to independence. However, effective certification may require firm-specific expertise, in particular for intangible-intensive business models. However, this latter form of expertise is negatively related to independence as it is commonly measured and evaluated. We show that there exists an optimal share of independent directors for each company, related to the magnitude of intangible resources.

Key words: Board of directors, information disclosure, accounting, intangible resources

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Introduction

Over the last decade, the multiplication of high profile corporate scandals and bankruptcies (Enron, Worldcom, Parmalat, Lehman Brothers, AIG, etc.) has put the control of public companies' executive management at the forefront of the agenda. From this point of view, information disclosure is (almost) universally regarded at the cornerstone of an effective institutional design, especially when (minority) shareholders are at 'a distance' of the company and its business model (Berle and Means, 1932).

Yet, as regulators and academics have long ago recognized, relevant and reliable information disclosure crucially depends on corporate governance (Brown, 2007): who is accountable for the production and certification of financial and non-financial reporting? This issue necessarily implies to penetrate the 'black box' of public companies, to investigate the set of relationships existing between the different firm's constituencies (Cohen, Krishnamoorthy and Wright, 2004). Invariably, the analysis points to the responsibility of the Board of directors, which acts as strategic counsellor, facilitator of network relations, and monitor of the business affairs (see e.g. Johnson, Daily and Ellstrand, 1996). This latter role notably includes hiring and firing the Chief Executive Officer (CEO) and other executive managers, determining executive pay and supervising the processes of reporting and disclosure of the business firm. The Board achieves this latter objective by recommending the external auditor to shareholders, and by interfacing with the external auditors, the internal auditors, and the management. In addition, in almost all jurisdictions, the Board should certify financial statements and other public information[2]. In this way, it helps alleviate the agency problem by facilitating the regular release of unbiased accounting information by managers to those who hold a stake in the business firm (including shareholders), thus reducing the information asymmetry between insiders and outsiders.

The crucial question is then the following: what are the characteristics of the Board likely to improve the performance of this certification role? The "conventional wisdom" (Bhagat and Black, 1999), both among regulators and corporate governance scholars,

[2] In the U.S. case, existing signature requirements for reports filed under the 1934 Exchange Act and the 2002 Sarbanes Oxley Act demand at least a majority of directors to sign annual reports taking specific responsibility on them even beyond formal compliance with accounting standards. According to the Second Circuit Court of Appeals, the "critical test" is "*whether the financial statements as a whole fairly present the financial position*" of the company (see U.S. v. Simon, 425 F. 2d 796, 805-6 (2nd Cir. 1969), cert. denied, 397 U.S. 1006 (1970)). The importance of the Board in shaping the overall quality of public company reporting is regularly reaffirmed by the Securities and Exchange Commission (Brown, 2007), whose primary function is to ensure adequate disclosure. A conspicuous example is provided for by the W. R. Grace Report (1997) – a section 21(a) Report – that notes: "*the Commission considers it essential for board members to move aggressively to fulfil their responsibilities to oversee the conduct and performance of management and to ensure that the company's public statements are candid and complete*". In the British case, the Combined Code on Corporate Governance (2003) – listing rules required public company to report on how it applies the principles in this Code or to provide an explanation – clearly states: "*Non-executive directors should scrutinise the performance of management in meeting agreed goals and objectives and monitor the reporting of performance. They should satisfy themselves on the integrity of financial information and that financial controls and systems of risk management are robust and defensible*" (p.5). In the French case, legal duties for directors are stated in the *Code de commerce*: article L.232 indicates that in listed companies, the Board must certify the financial statements.

points to 'independence' of directors as the essential attribute. As noted by Cunningham (2007), it is by now usual to answer to corporate crises by looking to transparency assured by independent directors, where independence is defined or proxied through a set of formal criteria (*de jure* or formal independence). The Sarbanes Oxley Act, passed in 2002, is no exception, requiring that audit committees be comprised solely of independent members. The objective is clear: *de jure* independence should help to limit conflict of interests, thus increasing the performance of directors in their monitoring activity. In the case of certification, independence guarantees that the decision not to validate biased information is made without collusion or delay.

Some recent evolutions suggest that this 'conventional wisdom' is progressively challenged, with expertise being increasingly recognized as a decisive attribute, especially for the audit committee (Cunningham, 2007). In particular, the Sarbanes Oxley Act introduced a path-breaking provision, by requiring that all audit committee members have financial literacy and that at least one person be a financial expert (section 407)[3]. The idea is intuitive: generic expertise in accounting and finance, acquired through education or professional activity, potentially increases the relevance and reliability of disclosure and improves the quality of financial and non-financial reporting that the Board must certify.

Yet, especially for certain types of business models, effective, trustworthy certification requires *firm-specific*, in complement to *generic*, expertise. It will be the case, in particular, whenever intangible resources, related to innovation, knowledge and human resources, are significant drivers of the performance potential of the business firm. The main reason is that these 'intangible' resources, by their very nature, raise serious problem of valuation (recognition and measurement) for outsiders and often lack efficient market pricing (Lev, 2001). From an accounting point of view, the dilemma is then the following: either deliberately ignoring those resources – exacerbating information asymmetry between insiders and outsiders – or applying specific reporting rules – which require firm-specific expertise by directors to be efficiently implemented.

The critical point then is that this latter form of expertise trades-off with *de jure* independence as it is commonly defined and proxied. This is not the case for generic expertise, which can easily be combined with those criteria of independence. As a consequence, focus on independence may have (had) adverse consequences by reducing the ability of Board members to discover and certify financial and non-financial firm-specific knowledge in circumstances that are likely to be significant in contemporary businesses. More precisely, we show that there exists an optimal share of independent directors for each company, related to the core characteristics of the business firm. We derive two main implications from this analysis. On the one hand, 'super-majority' Boards (that is Boards with at least 80% of *de jure* independent members) appear to be attractive devices only in very limited cases – contrary to what is usually called for. On the other hand, "grey" or "affiliate" directors (that is, directors that do not meet the standard criteria of independence while not being member of the firm's executive management) may enhance the overall quality of control, including certification.

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[3] In the U.K., the Combined Code (2003; see *supra*, note 1) also contains financial expertise recommendation.

Our analysis complements and extends Osterloh and Frey's (2006) argument, who insist on the role that may be played by insiders with firm-specific knowledge in responding to critical issues of corporate governance. We expressly focus on the monitoring role of the board, and what is undoubtedly at the core of this role: the supervision of information flux from the firm to outside stakeholders, including investors on the (stock) market. By so doing, we connect this corporate governance issue with accounting theory and practice. This connection is partially suggested by Gordon (2007) who argues that the growing magnitude of information disclosed by listed companies makes insiders and other firm-specific experts *less* valuable as corporate directors. On the contrary, our analysis stresses the importance of their inside perspective for improving on the quality of disclosure and control.

The rest of the paper is organised as follows. The first section disentangles the information set available to outside stakeholders, especially shareholders, to make accurate financial decisions concerning the business firm. The main point is that the set of business information to be disclosed is jointly constituted of market-driven and firm-specific information. The latter type of information is likely to be relevant in business models where performance is mainly driven by intangibles resources. This distinction is mirrored by accounting methods. The second part focuses then on accounting as the main device allowing the transmission of information (both market driven and firm-specific) from the inside to the outside of the business firm. In particular, we argue that the certification of financial statements by directors disposing of specific business knowledge becomes increasingly important with the growing significance of intangible resources. The third section focuses then on the Board of directors: we discuss Board characteristics that are likely to induce an efficient certification. The existence of a trade-off between two of these characteristics (*de jure* independence and firm-specific expertise) is emphasized, and helps to deliver an optimal share of independent directors, depending on the relative importance of intangibles resources in the business model. Section fourth concludes.

1. The informational basis of stock market investment and corporate disclosure

This section disentangles the informational basis of financial decision-making in the stock market (1.1) and relates this basis to the kind of resources (tangible *versus* intangible) involved at the firm level (1.2).

1.1. Financial investors and the relevant information set

Both standard setters – in particular the U.S. Financial Accounting Standard Board (FASB) and the International Accounting Standard Board (IASB) that regulates E.U. listed corporate groups – and a majority of accounting scholars now share the idea that the primary function of financial reporting is the provision of information to investors. This provision enables them to assess the amounts, timing and uncertainty of future cash flows from their investment in corporate shares or debt securities (SFAC n°1, §37; IASB Framework, §15). Under this financial 'decision usefulness paradigm' of

accounting (Hitz, 2007), (accounting) relevance is defined as the degree of correspondence between required and disclosed information. Then, the assessment of accounting relevance necessarily leads to investigate the kind of information on the business company (as opposed to macroeconomic evidence) required by financial investors to make accurate financial decisions.

Basic financial theory provides some clear-cut answers as to this kind of information. A first set of assumptions concerns the characteristics of investors receiving the information. Investors are expected to be rational (they maximize the expected utility of lifetime consumption) and capable of borrowing or lending without constraints, at a given interest rate i. Individual preferences are then irrelevant (consumption and investment decisions can be separated) and the sole information required by investors is the ability of the firm to deliver future revenue. "Fundamental value" of the firm (FV) can then be defined as the discounted value of (expected) net future cash flows to its residual claimers:

$$FV = \sum_{t=1}^{\infty} \frac{R_t^e}{(1+i)^t} \qquad (1)$$

where R^e_t is the expected net cash flow at time t, and i the usual discount rate.

A second set of assumptions concerns the origin of these (expected) cash flows, that is, the type of 'resources'[4] deployed by the production process. In the simplest case, the set of resources is only composed of tangible, separable resources. Then, the fundamental value of the firm is expected to be equal to the sum, properly discounted, of the net contributions of these resources to the fundamental value of the whole firm (see e.g. Brealey and Myers, 2005, Ch.9):

$$FV = \sum_{t=1}^{\infty} \frac{r_{1,t}^e}{(1+i)^t} + \sum_{t=1}^{\infty} \frac{r_{2,t}^e}{(1+i)^t} + \ldots + \sum_{t=1}^{\infty} \frac{r_{n,t}^e}{(1+i)^t} = \sum_{j=1}^{n} \sum_{t=1}^{\infty} \frac{r_{j,t}^e}{(1+i)^t} \qquad (2)$$

where $r^e_{j,t}$ is the expected net contribution of resource a_j at time t, $j = (1, \ldots, n)$. In this way, the firm merely is a *collection* of n resources, and the fundamental value of the firm corresponds to the aggregation of the fundamental values of its resources.

A third set of assumptions relates to the existence of an efficient pricing for each firm's resource as well as for its shares. Suppose that every resource is traded in a competitive, liquid market by rational investors. Then, the equilibrium price (p_j) of a resource a_j equals its fundamental value, so that no mispricing occurs. (Capital) markets are then fundamentally 'efficient', in the sense that the price of a resource fully and correctly incorporates all available information on the ability of this resource to generate net revenue through time (Fama, 1970; Malkiel, 1992). As applied to the business firm, the Efficient Capital Market Hypothesis (ECMH) implies that the share price of a firm (P)

[4] We prefer not to use the term 'assets' because of its special accounting meaning: an asset is a resource that is recognised in the left side of the balance sheet.

is equal to its 'fundamental value'[5]. If all the resources as well as the firm's shares are traded on (fundamentally) efficient markets, then equation (2) becomes:

$$FV = P = \sum_{j=1}^{n} p_j \qquad (3)$$

Summing up, under this whole of hypotheses concerning investors, the economic nature of the firm and the functioning of markets, the (fundamental) value of a firm (*FV*) can be derived from the market value (p_j) of all its resources (a_j). This *list of prices* constitutes the whole set of information on the company required by financial market investors to properly value the business firm, that is, to assess the structure of its future cash flows.

This conceptual framework clearly relies on restrictive assumptions and may be questioned from at least two different viewpoints. Let define Φ the set (or vector) of information available to investors to assess the fundamental value of the business firm. The first critique refers to the efficiency of share market with respect to the treatment of the information set Φ, i.e. to the dynamics of share price formation. Some investors may not be fully rational, as recognised by behavioural finance and cognitive psychology (Shleifer, 2000): either their preferences depart from the expected utility framework or their beliefs are subject to overconfidence, conservatism, and irrational exuberance. Even assuming the coexistence of rational and non-rational investors, limits to arbitrage (e.g. constraints on short-selling) may prevent an alignment of fundamental and market values (Barberis and Thaler, 2003)[6]. In sum, and whatever the reasons, some may question the ability of the market to provide efficient pricing, in the sense of the ECMH: market prices may not efficiently 'exploit' the relevant information set Φ.

The second viewpoint, the one we shall insist on, disentangles the precise content of Φ, rather than its exploitation by investors. While keeping the fundamental value perspective – the idea that investors are primarily interested in the ability of the firm to deliver future performance – one should consider the (plausible) facts that the individual contributions of each resource cannot be clearly identified (problems occur at the level of equation 2), or that some resources may not be transacted on a competitive, liquid market (problems occur at the level of equation 3). In these cases, the relevant information set should encompass pieces of information that are not encapsulated or subsumed into a market price. For instance, the aptitude of the firm to deliver a particular form of training to its workforce may be a relevant driver of performance potential, but it does not have any available market pricing of reference. Accordingly, investors should generally rely upon a set of available information that is partly endogenously generated by market pricing (market-driven), and partly generated by other sources of information, external to the market, which are specific to the firm and its special economic environment. Then, the whole set of relevant (decision-useful) information Φ required by investors results from and comprises two main subsets of information:

[5] Note that this identification of fundamental and market values for a share is a typical result (and not just an hypothesis) of the Capital Asset Pricing Model (CAPM), the standard model of equilibrium asset pricing, where all investors share homogenous beliefs of the joint distribution of (future) payoffs on the share (Sharpe, 1964; Lintner, 1965).

[6] Moreover, when models of asset pricing with heterogeneous beliefs are used, then the identity of market price and fundamental value is no longer guaranteed (Stout, 2003).

$$\Phi = (p_h ; y_k),\ h = 1, \ldots, l \text{ and } k = 1, \ldots, m \qquad (4)$$

where p_h is the subset of market-driven information, and y_k is the subset of non-market, firm-specific information.

1.2. The case of intangible resources

So-called 'intangible' resources are a typical example of resources that usually do not meet the criteria of marketability, while being important drivers of performance for contemporary business firms. Intangibles are non-physical (they lack any material support), non-financial (they do not provide any legally-enclosed revenue) and provide relevant future benefits (Kim, 2007). Generally speaking, the following expenditures are associated with the development and maintenance of such intangibles: (i) spending on information and communication technologies (hardware, telecommunication infrastructure and software); (ii) spending on Research and Development (R&D, scientific and non scientific) and patents; (iii) spending on development and maintenance of brands and trademarks; (iv) spending on workforce training in firm-specific capabilities and improvements in labor organization (total quality management, job rotation, just-in-time, team working, and so on).

The evidence strongly suggests that intangible resources are a crucial component of long-term performance or profit (Villalonga, 2004). At the macro level, measurements on US data lead to the conclusion that, at the end of the 1990s and the beginning of the 2000s, private investment in intangibles roughly equaled investment in tangibles, representing around 10% of domestic output (Nakamura, 2003; Corrado, Hulten and Sichel, 2006). Corrado *et al* (2006) find that, for the period 1995-2003, intangibles accounted for 27% of the annual growth, a percentage equal to tangibles for the same period. At the micro level, countless studies have examined the role played by R&D (Griliches, 1994), new technologies (Black and Lynch, 2001) or innovative organizational practices (Black and Lynch, 2001; Caroli and Van Reenen, 2001) on firm performance.

Overall, complementarities are shown to be pervasive in a business model driven by intangibles (see e.g. Antonelli, 2001; OECD, 2006). Complementarities occur when the combination of two different resources yields greater output than their separate use. When resource prices are held constant, this combination symmetrically reduces total costs. Empirical studies stress the joint contribution provided by intangibles that relate to workforce training, R&D and organizational innovation. For example, regarding Information and Communication Technologies (ICT) and new work practices, Breshnahan, Brynjolfsson and Hitt (2002) observe that ICT have a stronger impact on productivity in firms that adopt decentralized labor organization at the same time. Moreover, regarding training and new work practices, different studies provide evidence of a correlation between training efforts and labor reorganization, suggesting that their joint combination does improve performance (see e.g. Lynch and Black, 1998). Finally, Scicchitano (2007) provides evidence of complementarities between R&D and on-the-job training.

Because of such complementarities, intangibles do not fit the peculiar framework assumed by equations 2 and 3 regarding separability and marketability of individual

contributions (see also Ijiri 1967, p.58; Lev, 2001). Furthermore, even though one intangible resource related to some support could be separately marketable (for example, a patent), its sale might imply losing both all complementary and interdependent utilities embedded in its relations with other elements of the firm, and the overall contingent advantage which collectively renews the firm performance over time. Accordingly, proper information on intangible resources is not, most of the time, accessible through markets. Rather, it usually belongs to the subset of firm-specific information.

Summing-up, in a world of complete (meaning one market per resource) and perfect (in the sense of fundamentally efficient) markets, the information set would be reduced to a list of market prices. Then the certification provided by the Board merely consists in assessing the firm's collection of resources in line with external market prices. However, relaxing these restrictive assumptions, entity-specific information results to be required by outside stakeholders. Yet the 'firm-specific' subset of Φ raises challenging question. Market prices are public, objective information, easily accessible once generated by the 'invisible hand' of the market. In addition, their interpretation is unambiguous: everyone agrees that a resource whose price goes from 6$ up to 12$ is exactly the double than before. By contrast, the statement that the quality of workforce training was substantially improved may be interpreted in different ways by different actors. Furthermore, the meaning and reliability of this statement also depends on the characteristics of the agent that claims it. The difference between the two subsets p_h and y_k is nicely captured by the distinction between 'hard' and 'soft' information, as proposed by Stein (2002) or Petersen (2004)[7]. Accordingly, the quality of firm-specific information critically depends on the context under which it is discovered and disclosed, and the certifiers of this information are a critical part of the process of disclosure. Then, the likelihood for 'firm-specific' information to be biased, or incomplete, cannot be taken for negligible. As a consequence, even if the (stock) market is efficient, the available information set may not be fully relevant to be used by investors for proper decision-making. Investors may make the most efficient use of the information set that is available, but the latter may be too narrow or biased to provide a proper basis for assessing the ability of the firm to deliver performance over the long run.

For these reasons, the production of firm-specific information is typically performed by the accounting system, which provides enforced conventions, standards and rules to frame the disclosure and reporting processes. From this point of view, the accounting system constitutes one of the cognitive prerequisites that enable investors to effectively play the share exchange over time, leveling the market playing field by providing common knowledge on the business entity performance and position through time (Shubik, 1993; Sunder, 2002).

2. Public disclosure of information: the role of accounting

[7] According to Petersen (2004), "*for the information to be hard, the meaning is dependent only upon the information which is sent.* […] *With soft information the context under which it is collected and the collector of the information are part of the information. It is not possible to separate the two*" (p.7).

This section analyses the special role played by accounting in the disclosure of information (2.1.) and then insists on the specific case of intangibles (2.2.).

2.1. Market basis *versus* entity-specific basis for accounting

Interestingly, the previous distinction between the two subsets composing the information vector Φ is mirrored by accounting, which shows two main models or bases: a "market basis" and an "entity-specific basis" (IASB 2005)[8]. These models primarily differ in accounting methods applied to represent business resources into financial statements (Anthony 2004, p.25).

Accounting for a resource on a 'market basis' implies measuring it at its exchange price under competitive market conditions, reflecting the market's expectations as to the amounts, timing and uncertainty of future cash flows discounted at market rates of return for commensurate risk. The market basis appreciates the market price as the resultant of the whole set of future cash flows imputable to the resource *j*:

$$p_j = \sum_{t=1}^{\infty} \frac{{}^{+}r^{e}_{j,t} - {}^{-}r^{e}_{j,t}}{(1+i)^t} \qquad (5)$$

Where ${}^{+}r^{e}_{j,t}$ is the (expected) inflow at time *t*, ${}^{-}r^{e}_{j,t}$ is the (expected) outflow at time *t*, both flows being imputable to the resource *j* having a market price p_j, with *i* the discount rate of reference.

The market basis for accounting therefore applies a "stock method" (measurement on the basis of a discounted prevision of a stock of wealth). Known also as 'fair value' or "marked-to-market" accounting, this stock method may be performed in two different ways. Either it is assumed that this measurement has been (efficiently) performed by a market: the market price is then used as a direct measure of the value, keeping accounting items in line with external market prices of reference. Either this measurement is internally generated through accounting models, considering that no efficient pricing is directly accessible but may be mimicked by relying on some assumptions on future cash flows and proper discount rates[9].

In contrast, accounting for a resource on an 'entity-specific basis' refers to expectations and data from the reporting entity. When representing a resource, the entity-specific basis applies a "flow method" that recognizes past and current costs (rather than future net revenue) under conventions on the continued usefulness of the underlying resource for the enduring economy of the firm. So called "historical cost" accounting is a typical example of this measurement basis, where resources are accounted for through the flow of monetary expenditures (${}^{-}r_h$) related to that resource or activity:

[8] This article uses "firm-specific" and "entity-specific" as equivalent expressions

[9] The reliance of 'marked to model' on specific information and data, that the market is by definition unable to validate, questions whether this measurement technique really belongs to the market basis, rather than to the entity specific basis.

$$C_j = \sum_{h=1}^{n} \bar{r}_{j,h} \qquad (6)$$

Where C is the cumulated amount of expenditures $\bar{r}$ that have been disbursed to period $h \subset (1,...,n)$ to develop and maintain the resource j. Contrary to the stock method, no legal or material support is required, since the resource has not to be marketable. Only the existence of imputable expenditures and appropriate conventions of continuity and usefulness apply.

Entity-specific basis is not limited to the measurement of resource through so called 'historical' cost accounting, but also encompasses the broad set of qualitative statements, like narratives and classifications, aiming at providing firm-specific information and/or forward looking information. This type of firm-specific, less quantitative information has grown rapidly over the last decades. Concerning US listed companies, Gordon (2007) documents a large increase in the quantity of firm specific information delivered, in particular, through the Form 10-K, from about 75 pages in 1985 to 166 in 2004. Of particular interest is the growth of the 'Management's Discussion and Analysis' (MD&A), that should, according to the SEC (Securities Act Rel. n°6711, April 21 1987) "*focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial conditions*". According to Gordon (2007), average MD&A expanded from about 5 pages in 1985 to 24 in 2004. In France, entity-specific basis of accounting is provided for by the *Rapport de gestion* (Business report, Commercial Code art. L. 225-102-1)), and the complementary disclosure on corporate social responsibility established by the "New Economic Regulation" (NER) Act of May 2001 (Law n°2001-420 of 15 May 2001). This set of reports delivers 'forward looking information' (through a document on the general situation of the company and its expected evolution) as well as a document detailing how social and environmental consequences of corporate activity are dealt with. Needless to say, this information is firm-specific , of a 'soft' nature, and lacks in adequate market pricing of reference.

To conclude, by referring to expenditures incurred by the firm or to qualitative information specific to it, the entity-specific basis of accounting clearly refers to the firm-specific subset of the Φ vector, while the marked-to-market basis of accounting refers to the market subset.

2.2. Accounting for intangibles

The regulatory treatment of intangible resources offers a conspicuous example of the consequences of these two accounting bases. A first possibility is to favor a market basis for the measurement of these resources: the international accounting standard for intangible assets (IAS38, §39) retains this solution, linking informational reliability to market-based estimates of value. Therefore, this accounting standard denies the asset recognition and measurement to a number of expenditures related to resources that lack a proper market basis, such as "*research activities aimed at obtaining new knowledge; search for, evaluation and final selection of, applications of research findings or other knowledge; search for alternatives for materials, devices, products, processes, systems*

or services; and the formulation, design, evaluation and final selection of possible alternatives for new or improved materials, devices, products, processes, systems or services" (IAS 38, §56). Generally speaking, internally generated intangibles, such as core research activities, are not capitalized as assets, even though "*entity's costing systems can often measure reliably the cost of generating an intangible asset internally, such as salary and other expenditure incurred*" (IAS 38, §62).[10]

Therefore, this regulatory choice to confine the accounting reporting to market basis methods is likely to involve investment decision-making based on an incomplete set of information, whenever intangible assets are important drivers for future performance[11]. On the contrary, the importance of intangibles should pave the way to appreciating other accounting methods having an entity-specific basis. A pure historical cost accounting system, that may capitalize and amortize the expenditures (including deferred charges) linked to internally generated intangibles as depreciable assets, is a convenient way to perform this measurement. Evidence of this treatment have existed in European accounting systems and regulations before the adoption of International Financial Reporting Standards (see e.g. in the French case: "Plan Comptable Général", articles n°361-1, 361-2, and 361-3), and in the current Japanese accounting standards on R&D Cost and Intangible Assets.

Furthermore, this entity-specific accounting representation is not limited to financial figures (quantitative information), but may also include classifications and narrative explanations (qualitative information), disclosed according to accepted principles of informational veracity. An interesting case of such a system as applied to intangibles is provided by the French regulation on social reporting ("*bilan social*"), which requires big companies to establish a conventionally standardized set of non-financial measures on workforce-related issues such as remuneration, training, and security at work (*Law* nº 77-769 of 12 July 1977). This set is not publicly disclosed, but is available to every employees and their representatives. Another example is the voluntary disclosure devoted to environmental and social responsibility issues that is increasingly provided by companies worldwide and sometimes audited by specialized consulting firms (KPMG, 2008).

In conclusion, improvements on an entity-specific basis appear to be best suited for recognizing and accounting for intangibles resources while coping with the main goals

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[10] Other examples are provided by IAS38 – Intangible Assets, §6, ver. 1998 and IAS38 – Intangible Assets, §63-64. On this point, see Eckstein (2004).

[11] This point is fully acknowledged by the OECD (2006, p.7), who notes: "*traditional accounting has necessarily remained focused on tangible assets. Traditionally, the only intangible assets recognized in financial statements have been intellectual property, such as patents and trademarks where a market value has been established by a transaction, and acquired items such as goodwill. Although accounting standards can probably be developed further to take into account a wider range of intangibles, clear limits are set by the difficulty of establishing monetary values (valuation) that are at the same time consistent across firms, verifiable and that cannot be easily manipulated. As a result, a significant portion of corporate assets go under-reported in the financial accounts. The relative lack of accounting recognition of intangibles coupled with their growing importance in the value creation process means that the financial statements have lost some of their value for shareholders. If other information does not fill the void, there could be misallocation of resources in capital markets*". See also Blair and Wallman (2001).

of auditing and enforceability of public information disclosure. Intangibles may then be recognized and accounted for through capitalization of bundles of imputable monetary outflows (expenditures), supplementary systems of non-monetary measurements, and trustworthy disclosure of narrative information. This inside-related information may require special control setting to be disclosed and audited in a reliable and consistent way. In particular, and this is the crucial point we shall discuss in the following section, the certification of such information disclosure necessarily requires some firm-specific expertise by directors.

3. Board independence and firm-specific expertise: the trade-off

Under the "decision usefulness paradigm", the performance of the accounting process should be evaluated according to the degree of correspondence between required and disclosed information. This performance is then a function of the system of disclosure achieving this process including the accounting standards and the actors having ultimately in charge the certification of the financial statements. Accordingly, companies' directors have a crucial role to play to enhance the overall quality of financial and non-financial reporting (Cohen, Krishnamoorthy and Wright, 2004). In turn, this may improve the accuracy of financial decision-making by investors and shareholders.

As part of its monitoring role, including the validation of financial and non-financial reporting, an essential attribute for the Board is the propensity of its members not to collude with corporate executives – that is to be "objective" (Boot and Macey, 2004). Of course, objectivity is ultimately a *subjective* disposition. Yet distant shareholders and other external stakeholders, as well as regulators, need to rely on clear-cut proxies. Accordingly, the basic idea common to a number of existing definitions of "independence" is to identify some *objective* criteria that minimize the conflict of interests between directors and corporate officers. Generally speaking, independence is assumed to be compromised if the director of a company (*i*) is, or has been, a corporate executive of that company or of its affiliates, (*ii*) is, or has been, employed by that company or by its affiliates, (*iii*) is employed as an executive of another company where any of that company's executives sit on the Board, (*iv*) is a large block-holder of that company, (*v*) has a significant business relationship with that company or its affiliates. On this basis, three types of directors are usually distinguished according to their relative degree of independence (Clarke, 2007). "Executive" or "inside" directors are corporate executives. "Affiliated" or "gray" directors are not executives, but they do not meet one of the previous criteria; this category encompasses in particular employees, long-term block-holders or investment bankers in relation with the company. Finally, "independent" directors are outsiders that fulfil the whole set of criteria.

As a general proposition, *de jure* independence is supposed to foster "objectivity", which in turn increases the probability to impose sanctions on imprudent or underperforming managers. Following this approach, Ferreira, Ferreira and Raposo (2008) define independence as the probability for a CEO to be fired and replaced by the Board, once the share market (or the Board itself) has discovered the CEO's poor performance. Considering certification, such a definition of independence makes sure

that directors will reject information that they believe to be biased or incomplete, and will make sure that appropriate market values have been used to evaluate corporate assets (Gordon, 2007).

However, independence (even augmented with generic literacy in accounting and finance) can be the sole attribute determining the quality of disclosure only when the information set to be certified only comprises market-driven information. As argued *supra* (1.1), a non-negligible part of the relevant information set needed by investors is firm-specific (y_k) and the quality of this "soft" information is intrinsically related to the characteristics of the actors that produce and certify it. Put differently, accounting figures are not, most of the time, subject to validation through market evidence. This is especially true for narrative information dealing with intangibles (see *supra* 2.2), as well as for 'forward looking' information intending to identify factors that may impact firm's future performance and position. But this is also true for pure historical cost accounting: the appropriate identification, classification and imputation of expenditures to related intangible resources requires a specific knowledge of the context and processes that have been in place inside the firm to develop and maintain these resources.

Whenever firm-specific information is disclosed, the economic usefulness of the certification of accounting information by the Board depends on the ability of its members to actually understand the main features of the business model. And this cognitive aptitude is less related to a generic expertise in accounting and finance than to specific knowledge of that business over time (Lanfranconi and Robertson, 2002). When directors do not have any particular firm-specific expertise, then their certification becomes purely formal, whilst acquiring economic significance whenever the magnitude of such expertise increases.

Therefore, trustworthy certification requires both the willingness to refuse accreditation of biased or narrow reports, and the ability to discover and assess firm-specific information. As a consequence, the overall quality of control over the information disclosure increases with *both* independence of directors *and* their firm-specific expertise.Yet, while there is no reason to posit that generic expertise is negatively linked to *de jure* independence, things are different for firm-specific expertise. As the previous definition makes clear, the usual criteria applied to proxy independence in practice result in putting a distance between the firm and its directors so as to minimize potential conflict of interests with executive management. In turn, this distance tends to reduce the directors' ability to discover and assess firm-specific knowledge. By contrast, being part of the firm as a going concern (as do executives and non-executive employees) or being in close connection with it (as do investment bankers, or large block-holders, or representatives of main stakeholders) provides some noticeable advantage in dealing with firm-specific information based on inside knowledge of the business model. It is widely recognized that independent (outside) directors experience a cognitive disadvantage over non-independent (insider) directors (see e.g. Baysinger and Hoskisson, 1990, p.74; Klein, 1998, p. 278; Osterloh and Frey, 2006). This disadvantage may, in some circumstances, undermine the overall monitoring performance of a purely independent Board. For instance, appointing an independent director (an academic lawyer in corporate governance, for example) to the Board of a listed bio-technology firm – a Board that should certify the disclosed information on the

way R&D activities are dealt with – is like appointing an economist to an academic jury concerned with a doctoral defence in theological aesthetics. While the economist will surely be 'objective' (meaning impartial in the conflicts running across the theological aesthetics scholars community) one may seriously doubt of its ability to actually assess the overall quality of the candidate.

A complementary way to express the argument is to distinguish between *de jure* (formal) independence and real (substantial) independence. Because of the cognitive disadvantage they have over insiders, *de jure* independent directors have to rely on the information provided by the firm's executive management to fulfil their monitoring role (McNulty and Pettygrew, 1999). This reliance actually limits directors' real independence, i.e. the ability to monitor in perfect 'objectivity'. By contrast, a firm-specific expertise, in the sense of a deeper business understanding, may increase real independence (Hooghiemstra and van Manen, 2004; Wagner, 2008).

Summing-up, independence offers decisive advantages in terms of control, but it also implies an opportunity cost by reducing the Board's ability to cope with entity-specific information. Accordingly, a fundamental trade-off can be reasonably expected between *de jure* independence and firm-specific expertise that determines an optimal level of independence[12].

The following economic model aims to capture the basic functioning of this trade-off. For sake of simplicity, let assume that each Board member may be either a firm-specific expert (defined as *e*) or independent (defined as *i*). Normalizing the size of the Board to one, we have (with *i* the relative share of independent Board members):

$$i = 1 - e \in (0,1)$$

Furthermore, let assume that the firm is characterised by a given relative presence of intangible resources, which do not have a market basis of accounting and disclosure. This degree *k* is normalised to one. Moreover, let assume that $k \geq e$. This simply implies that the knowledge or expertise by the Board is never complete.

In this framework, the total agency cost related to the Board acting as certifier may be defined as

$$B(i,e,k) \equiv W(i,e) + D(i,k) + C(e,k) + M(e,k) \qquad (7)$$

Or, equivalently,

$$B(i,k) \equiv W(i,1-i) + D(i,k) + C(1-i,k) + M(1-i,k) \qquad (7')$$

[12] Ferreira *et al* (2008) propose a model, where shareholders optimize on the level of independence. Like our argument, the main advantage of independence is to make sure that a 'bad' CEO will be fired. But the tradeoff they propose is different: in their model, there is a monetary cost supported by shareholders for independency (due to dispersed ownership in particular). Here, the cost of independence is non-monetary: it is the reduced ability of directors to acquire and certify firm-specific information. A further difference might be pinpointed: while the ability for the Board to identify a bad CEO is exogenous in their model, our analysis suggests that this ability is endogenous. In particular, it is decreasing with the level of *de jure* independence.

In particular:

- *W(i,e)* is the fixed cost of the Board related to the remunerations (w_i , w_e) paid to its members (*i* ,*e*). Its derivative is increasing (or null) in *i* when the independent member remuneration is higher than the expert member remuneration ($W'_i \geq 0$ iff $w_i \geq w_e$), and decreasing in *i* otherwise ($W'_i < 0$ iff $w_i < w_e$). Analytically, a generic function denotes this cost as follows:

$$W(i,1-i) = w_i \cdot i + w_e \cdot e \qquad (8)$$

where W'_i , $W'_e > 0$.

- *D(i,k)* is the ignorance cost of the Board relative to its level of independence. It arises because independent members lack in the ability to discover, understand and certify relevant non-market, entity-specific information (*k*). According to the previous discussion, higher is the level of *k*, for a given level of *i*, lower is the ability of the Board to understand, and consequently check, the management behaviour (analytically, the derivative is then increasing in *k*: $D'_k > 0$); and higher is the level of independence of the Board (*i*), lower is the ability of the Board to understand a given *k* (analytically, the derivative is increasing in *i*: $D'_i > 0$). Furthermore, let assume: $D(i,0) = 0$ (i.e. if there are not entity-specific information, then no ignorance cost will arise for any *i*); and $D(0,k) = 0$ (i.e. if the Board comprises only experts, then, by definition, no ignorance cost will arise for any *k*). Analytically, this cost may be described as follows:

$$D(i,k) = d \cdot i \cdot k \qquad (9)$$

where $d > 0$ and D'_i , $D'_k > 0$.

- *C(e,k)* is the perking cost of the Board relative to its level of entity-specific expertise. It arises because specific expertise implies appointing Board members who are "insiders" and may then collude with management more easily than independent members. It is possible to rewrite this function as *C(1-i,k).* Its derivative is decreasing in *i:* $C'_i < 0$ (i.e. higher *i*, lower the perking cost), and increasing in *k*: $C'_k > 0$ (i.e. higher *k*, higher the opportunity to collude). Furthermore, let assume: $C(e,0) = 0$ (i.e. if there are no entity-specific information, then no perking costs arise for any *e* : there is no specific information to hidden); and $C(0,k) = 0$ (i.e. if the Board comprises only independent members, then, by definition, no perking cost arises for any *k*). Analytically, this cost may be described as follows:

$$C(e,k) = c \cdot e \cdot k \qquad (10)$$

where $c > 0$ and C'_e , $C'_k > 0$.

- *M(e,k)* is the monitoring supplemental cost of the Board relative to its independence. It arises because independent directors may need to hire professional consultants and auditors to assist them; the cost of hiring external experts therefore constitutes the opportunity cost of maintaining higher level of independence. According to the previous discussion, higher is *k*, higher is the cumulated cost of these external advises required to cope with *k* (analytically, the derivative respect to *k* is positive:

$M'_k>0$). Furthermore, higher is the quota of expert membership of the Board (*e*), lower is the monitoring cost (i.e. the derivative respect *e* is negative: $M'_e < 0$). Finally, when $e = k$, then $M(k,k) = 0$: when *e* reaches the maximum value, then there is no need to hire professional consultants and the opportunity cost is null. Analytically, this cost is described as follows:

$$M(e,k) = \tfrac{1}{2} \cdot m \cdot (k - e)^2 \qquad (11)$$

Where $m > 0$ and $M_k > 0$, $M_e < 0$, with $k \geq e$.

Accordingly, the total agency cost of the Board may be denoted as follows:

$$B(i,e,k) = (w_i - w_e) \cdot i + w_e + (d - c) \cdot i \cdot k + c \cdot k + \tfrac{1}{2} \cdot m \cdot (k - 1 + i)^2 \quad (12)$$

Efficiency requires to minimize this total cost $B(i,e,k)$ for each level of entity-specific information (*k*). Figure 1 comprises two graphs: graph 1 denotes the cost curve for each level of *k*; graph 2 denotes the corresponding locus of optimal values for (i^*,k^*).[13]

***** Insert Figure 1 here *****

In the graph (1), the y-axis represents the total cost $B(i,k)$ and the x-axis the level of independence of the Board (*i*). Each curve identifies the value of $B(i,k=given)$ and shows how such cost changes for each level of *i* when *k* is given. When *k* increases the cost function $B(i,k)$ is identified by escalating curves.

For a given level of entity-specific information (*k*), it is possible to identify an optimal level of Board independence that minimizes the cost function $B(i,k)$. Since higher *k* implies descending cost curves, then the optimal level of *i*, given by $B'_i(i,k^*)=0$, is a decreasing function of *k*. This decreasing function identifies the trade off between entity-specific information (*k*) and Board independence (*i*). Solving the minimization of the cost function $B(i,e,k)$ for each value of *k*, we obtain the *i-k* trade-off function:

$$i = 1 - \frac{(w_i - w_e) + (d - c + m)k}{m} \qquad (13)$$

This means that, higher is the entity-specific information (*k*), lower is the optimal level of independence of the Board (*i*). Our analysis then predicts that the optimal proportion of (*de jure*) independent Board members for a firm is decreasing with the importance of intangible resources in corporate performance. This relation between *k* and *i* depends on parameters. In particular, the optimal level of independent directors is lower when:

- w_i is higher then w_e ;
- *d* is higher than *c* (i.e. the ignorance cost is higher than the perking cost);
- *m* is higher (i.e. higher cost to hire external experts).

[13] This graph describes a simulation of the model when $w_i = w_e = 1, m = 4, d = 2, c = 3$. Different values of the parameters will not change the main results.

Graph (2) shows the *i-k* trade off function. When the degree of intangible resources (*k*) is zero, the optimal level of Board independence (*i*) is one: all members of the Board should be independent. Furthermore, $i = 1$ implies $e = 0$ and no perking cost arises. Finally, $k = 0$ implies that there is no specific information to discover: the ignorance cost is null. When *k* increases, for example when the management of the firm develops innovative practices, products or technologies, the relevant level of entity-specific information increases, and a full independent Board ($i=1$) is no longer capable to discover and properly certify the new 'information set' alone. A trade off between *i* and *k* arises. If the composition of the Board does not change, the agency cost will increase because *k* is higher. From one side, the ignorance cost increases ($D'_k>0$); from the other side, the independent Board has to hire professional experts to compensate its ignorance in entity-specific information *k* ($M'_i = - M'_e > 0$). More *k* increases, higher is the incurred cost to maintain a full independent Board. At some point k_0 (depending on parameters), a full independent Board becomes inefficient: for each $k > k_0$ the minimization of cost implies that some independent members of the Board should be substituted by expert members. This new composition of the Board implies lower monitoring costs (since expert members do better understand the entity-specific information), even though this increases the likelihood of supplemental perking cost (which increases in *e*: $C'_e > 0$).

Generally speaking, the trade-off implies an optimal composition of the Board comprising a mix of expert and independent members. The optimal share depends on the changing characteristics of industry and business (captured by parameters). Beyond some level of independence, further increases may then undermine the overall ability of the Board to perform an effective control on the business firm. As such, "excessive" independence may have adverse consequences and ultimately damage the performance of the firm. To some extent, this analysis sheds some light to a long-standing empirical puzzle: independence has a negligible or negative effect on firm performance (see e.g. Klein, 1998; Dalton, Daily, Ellstrand and Johnson, 1998; Bhagat and Black, 1999; Klein, Shapiro and Young, 2005; Bhagat, Bolton and Romano, 2008)[14]. This argument also provides some support to the emergent critique of the independence "vogue", as championed by Roberts, McNulty and Stiles (2005), the main contributors to the Higgs Report that led to the revision, in November 2003, of the British Combined Code: "*the advocacy by institutional investors, policy advisors and the business media for greater non-executive independence may be too crude or even counter-productive*" (p. S19).

By contrast, non-independent 'grey' or 'affiliated' directors, whose position involves firm-specific expertise, denote some attractive attributes to enhance the efficiency of corporate control and the overall quality of corporate disclosure. It is particularly the case with (non executive) employee representatives. On the one hand, the latter have long-term relationships with the firm as a going concern, while their interests rest distinct from those of the executive managerial team. On the other hand, workforce training in firm-specific capabilities and labor organization are identified among the

[14] See e.g. Bhagat, Bolton and Romano (2008): "*Board independence, however, is negatively and significantly related to contemporaneous, next year's, and next two years' operating performance. This result is surprising, especially considering the recent emphasis that has been placed on board independence by the stock exchanges' amended listing requirements post-Enron; however, it is consistent with prior literature on boards*" (p.1850)

main components of intangible drivers of performance (see Corrado *et al*, 2006). The inclusion of employee representatives on the Board may then enhance its ability to cope with firm-specific information and intangibles (on this point, see also Osterloh and Frey, 2006). This point is consistent with the empirical evidence provided by Fauver and Fuerst (2006), who show that the inclusion of worker representatives in the (supervisory) Board of German firms is positively correlated (up to a certain point) with the performance of those firms.

4. Conclusion

This article has dealt with the quality of financial reporting as a crucial component of efficient corporate control and share market pricing. The role of the Board of directors has been primarily investigated. We have shown that firm-specific expertise may be an important attribute for directors when the relevant information set for investors and shareholders encompasses so-called 'entity-specific' information. It is especially the case whenever intangible are significant drivers of performance, such as in high-tech and innovative industries. Yet we argued that this kind of expertise trades-off with *de jure* independence that is commonly advocated by institutional investors and policy-makers. Therefore, more (*de jure*) independence is not always desirable: there exists an optimal share of independent Board members that decreases with the importance of intangible resources. In sum, our analysis points to the attractiveness of pluralistic Board appointments composed of (*de jure*) independent members, affiliated members and representatives of stakeholders having specific knowledge of the business affairs. By contrast, and except in situations where business performance originate from a simple set of separable tangible resources, our analysis cautions against 'super' or 'full majority' Boards.

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Figure 1 – The Board cost and the trade-off between independence and entity-specific expertise